



CITY OF PORTLAND ENVIRONMENTAL SERVICES



1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204 ■ Nick Fish, Commissioner ■ Michael Jordan, Director

December 15, 2015

via electronic delivery

Mike Romero
Oregon Department of Environmental Quality
Northwest Region Cleanup Program
700 NE Multnomah St., Suite #600
Portland, OR 97232

Subject: Outfall Basin 22 Investigation Work Plan – Chevron Willbridge Distribution Center
(ECSI No. 25)

Dear Mike:

Due to mutual concerns regarding contaminated dry-weather flow discharges from the Chevron Willbridge Distribution Center (Site) to the Willamette River via City Outfall 22, the Bureau of Environmental Services' (BES) Portland Harbor and MS4 programs reviewed the above referenced work plan prepared by Arcadis and dated December 4, 2015. This work plan was developed for DEQ in response to a recent dry-weather flow investigation conducted by the City¹, due to sheen observations at Outfall 22.

As noted in the plan, the Site has been under a DEQ Cleanup Program Consent Order for more than twenty years to investigate and remediate site-related releases and pathways. Based on our review of the previous Site evaluation of the NW Doane Avenue storm line², the City dry-weather flow investigation, and recent inspection of the Site by the BES Industrial Stormwater program, the City concludes that the proposed work plan is not sufficient to investigate and control this pathway in an effective and timely manner.

Specific comments, intended to result in productive improvements to the work plan, are included below for your consideration.

1. The work plan identifies stormwater system upgrades that were made by the Site since 2010, several of which have no relevance to the preferential groundwater pathway from the Site to the Doane Avenue line. For those that may be relevant (e.g., piping upgrades and lining the tank farm), dates of the upgrades should be provided to determine whether they were made before or after the City's 2015 dry-weather flow investigation on NW Doane Avenue.

¹ Outfall Basin 22 Dry-Weather Flow, Inline Solids, and Sediment Investigation Technical Memorandum No. OF22-2. City of Portland, BES. July 2015.

² Letter from L. Scheffler (BES) to M. Romero (DEQ) dated October 31, 2012, re: Review of NW Doane Avenue – Stormwater Evaluation Report, prepared by ARCADIS for Chevron Environmental Management Company, and dated January 2012.

2. The City identified three potential preferential groundwater pathways from the Site to Basin 22: infiltration to the Site stormwater system and discharge to the Doane Avenue storm line via Site laterals; infiltration directly to the Doane Avenue line via unsealed Site lateral connections (i.e., around, not through the lateral); and infiltration directly to the Basin 22 conveyance system (i.e., directly to municipal pipes, manholes, etc.). The work plan proposes only to conduct a video investigation of an unspecified portion of one of these pathways (dry-weather flow in the Site laterals), even though Figure 2 indicates that SPH has been observed routinely or recently in monitoring wells located downgradient of Site laterals and adjacent to the Doane Avenue line (e.g. GPW-1 through 4). Expansion of the investigation is needed to investigate all parts of the Site storm system that potentially convey Site groundwater as well as the Doane Avenue line itself.
3. The work plan should present additional information such as the elevations of Site groundwater, the elevations of Site and City stormwater conveyance systems, and the lateral and vertical extent of known plumes, to help to identify the areas where preferential infiltration of contaminated groundwater has the potential to occur.
4. Video inspection alone is not likely to generate the data needed to determine whether and where source controls are needed. For example, without collecting and analyzing samples of observed dry-weather flow, the potential significance of dry-weather flow (in the Site storm system and/or in the City system) will not be known. In addition, the City investigation was not designed to sample all dry-weather flow pathways from the Site (e.g., dry-weather flow was recently observed to be present in the Site storm system connecting to Lateral #2; this was not sampled by the City and would need to be sampled from an access point on the Site). Consideration should be given to including a dry-weather flow quality component to the investigation and to identifying how video data could be used in a phased approach to subsequent source investigation and control.
5. Clarification is needed in regards to the discharge point for the Site manhole sampled by the City and previously believed to be connected to Lateral #2. Based on recent Site inspection and Figure 1, the manhole with the observed spent boom material is in a different location than the downstream Site manhole affiliated with Lateral #2. Site investigation of this manhole should include dye testing to confirm connection to the Doane Avenue storm line and if necessary, revision of the Site stormwater system map to show this as a fourth connection from the Site.
6. The work plan proposes to conduct one video survey in the first quarter of 2016. Rationale has not been provided for why this is an appropriate time for this investigation (e.g., how does the proposed schedule align with the timing of seasonal high groundwater levels?).
7. Consideration should be given to conducting monthly visual monitoring of the Site stormwater system at key locations, to supplement the video survey data.
8. Figure 1 provides a good overview of the Site and the City's Basin 22 investigation areas. Additional figures are needed to show the Site storm system and Basin 22 system in more detail, to summarize previous observations of dry-weather flow made by the Site in the Doane Avenue line (i.e., Figures 8 through 11 from the *Arcadis NW Doane Avenue Stormwater Evaluation Report*), and to illustrate more clearly which lines are proposed for video surveying.

9. Access to the City storm system on NW Doane Avenue will require a BES Sewer Access Permit. More information about the permit and the process for issuance can be obtained from Jacob Zachry (503-823-7126) in the BES Development Engineering Section.

Please contact me at (503) 823-2296 if you have any questions about these comments, and thank you for providing the work plan to the City for review.

Sincerely,



Linda Scheffler

Water Resources Program Manager

Enc.: Previous City comment letter, dated October 31, 2012, on the January 2012 NW Doane Avenue - Stormwater Evaluation Report

Cc: Alex Liverman, DEQ
Ken Thiessen, DEQ
Eva DeMaria, EPA
Barbara Adkins, City of Portland, BES
Kim Cox, City of Portland, BES



CITY OF PORTLAND ENVIRONMENTAL SERVICES



1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204 ■ Dan Saltzman, Commissioner ■ Dean Marriott, Director

October 31, 2012

Mr. Mike Romero
Department of Environmental Quality
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-4987

Subject: Review of *NW Doane Avenue - Stormwater Evaluation Report*, prepared by ARCADIS for Chevron Environmental Management Company, and dated January 2012

Dear Mike:

This letter provides comments from the City of Portland Bureau of Environmental Services to the Oregon Department of Environment Quality (DEQ) on the above referenced report for the Chevron Willbridge Terminal (ECSI 25) and ConocoPhillips Willbridge Terminal (ECSI 177) facilities located at 5531 and 5528 NW Doane Avenue, respectively. Both sites have potential complete stormwater and preferential groundwater pathways (including infiltration of separate-phase hydrocarbons) to the City's Basin 22 stormwater conveyance system.¹

Thorough characterization and evaluation of each distinct pathway (i.e., stormwater, groundwater, and SPH infiltration) is needed in order to conclude that additional source control measures are not needed onsite at either Chevron Willbridge and ConocoPhillips or offsite in the Basin 22 conveyance system (e.g., pipe lining). Each site has three piped connections to the NW Doane Avenue storm line and camera surveys indicate that groundwater infiltrates directly to this conveyance. The objective of the NW Doane investigation² was to evaluate the stormwater to surface water pathways from these sites to the river via the NW Doane Avenue storm line. Our review of the report indicates that: 1) more data are needed to complete the pathway evaluations; and 2) more documentation and analysis are needed to integrate site-specific data with data collected from Basin 22 in order to demonstrate how each pathway from these two sites has been controlled.

It has been challenging for the City to sort out how various documents generated by Chevron Willbridge and ConocoPhillips meet this need. While some issues identified in these comments may be addressed in part in other existing documents, the collaborative nature of the work being conducted by these parties may lend itself to a better integrated presentation of site-specific and offsite findings and conclusions. Specific comments on the NW Doane report are provided below:

¹ *Portland Harbor RI/FS Draft Feasibility Study (Appendix Q)*. Prepared for the Lower Willamette Group by Anchor QEA, LLC et al. March 30, 2012.

² *NW Doane Avenue Storm Sewer Evaluation Work Plan*, dated April 20, 2010. Prepared by ARCADIS for Chevron Environmental Management Company.

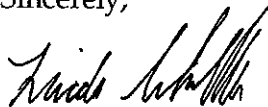
1. **Groundwater infiltrates directly into the NW Doane Avenue line in the vicinity of these sites; contaminant concentrations in dry-weather flow in the NW Doane Avenue line have not been characterized.** The report identifies the infiltration of SPH or contaminated groundwater from the Chevron and ConocoPhillips sites into the City's NW Doane Avenue stormwater conveyance system as a potential migration pathway to the Willamette River. Figures 8 and 9 in the report provide profile views of the NW Doane line and the relationship between high and low groundwater elevations. Data indicate that the stormwater line is in partial contact with the groundwater table year-round. The report presents the results of a 2010 video survey of the NW Doane Avenue storm sewer and documents areas observed to have significant staining, groundwater infiltration, and sheen (see observations in Table 1 and Figure 11) and notes that dry-weather flow was observed in the City's conveyance system and in connecting lines. The investigation did not include the dry-weather flow sampling that was in the work plan. Given the high concentrations of groundwater contaminants and the presence of SPH in groundwater monitoring wells located close to the City's conveyance line and onsite stormwater lines that discharge to the City's system, collection of dry-weather flow samples in Basin 22 is warranted. Observations presented in Table 1 and Figure 11 of the SCE Report could be used to identify sampling locations.
2. **Dry-weather flow data from onsite stormwater conveyance systems are not integrated into this evaluation.** Dry-weather flows have been observed, and in some cases sampled and analyzed, in the Chevron and ConocoPhillips stormwater conveyance systems. Piped discharge of contaminated groundwater from site conveyance systems to the NW Doane Avenue line, via one or more of the six connections to this line, represents a potentially significant pathway for offsite migration of contaminants to the river. Clear presentation of site-specific results with Basin 22 data is needed to evaluate the significance of this pathway.
3. **Stormwater data collected from Basin 22 does not provide the basis for site source control conclusions.** The SCE report presents the results of five stormwater sampling events conducted in the City's system. Stormwater samples were collected in the City's conveyance system upstream (manhole AAP791) and downstream (manhole AAM077) of piped connections from the Chevron and ConocoPhillips terminals. Specific comments regarding the stormwater samples are listed below:
 - a. The purpose or objective of the stormwater investigation is not clearly defined in the report. If the primary objective was to assess potential impacts to the river from groundwater/SPH infiltration from the sites via the NW Doane Ave. line, then dry-weather flow data should have been collected to quantify contaminant concentrations. Contaminant concentrations in dry-weather flow likely are diluted during wet weather discharge conditions. The use of stormwater samples to assess the significance of infiltration of groundwater and SPH into the City's system is not adequate to evaluate whether source control measures are needed for this pathway or to assess impacts to the City's system or the Willamette River.
 - b. Two pipes converge at the downstream sampling location: the NW Doane Avenue line and a storm line conveying flow from properties along NW Front Avenue. The report does not document where the stormwater samples from this sampling location were collected. It is unclear whether the stormwater samples

represent only discharges from NW Doane Avenue or mixed stormwater from the NW Doane and NW Front Avenue lines. The representativeness of the downstream samples should be discussed.

- c. Stormwater samples were analyzed for dissolved metals. No rationale is provided for not conducting total metals analyses. The use of dissolved metal concentrations likely underestimates potential impacts from stormwater discharges to the Willamette River via the City's stormwater conveyance system, because metals may be preferentially sorbed and transported with stormwater particulates removed during sample filtration.
 - d. Arsenic, cadmium, copper, lead, PAHs, phthalates, aldrin, and total DDT were detected above screening levels at a higher frequency in downstream stormwater samples than the upstream samples. The higher concentrations in the downgradient samples suggest that the two facilities are discharging contaminants to the City system and that additional investigation and evaluation is warranted to determine the source(s) and pathway(s).
4. The report states that arsenic was detected in groundwater and stormwater at concentrations above screening levels and that the presence of arsenic in groundwater is likely linked to "regional geography" and naturally occurring background concentrations. Arsenic concentrations in groundwater are significantly elevated and may be the result of reducing conditions in the subsurface due to the presence of hydrocarbons. The potential for arsenic-contaminated groundwater to enter the stormwater system should be further evaluated.

The City conducted this review and provides these comments in accordance with the joint objectives of the Intergovernmental Agreement between DEQ and the City for identifying and evaluating discharges to the City's shared stormwater collection system and making recommendations regarding appropriate source control measures. We appreciate the ongoing collaboration with DEQ on identifying and controlling contaminant sources in Portland Harbor. If you have any questions, please contact me at 503-823-2296.

Sincerely,



Linda Scheffler
Water Resources Program Manager
Portland Harbor Program

cc: Alex Liverman / DEQ
Richard Muza / EPA
Kristine Koch / EPA
Kim Cox / City of Portland, Bureau of Environmental Services
Marlea Harmon / Chevron Environmental Management Company